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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/541,589

07/07/2005

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EXAMINER

HAUTH, GALEN H

ART UNIT

PAPER NUMBER

4111

NOTIFICATION DATE

DELIVERY MODE

08/21/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com  
pto@gbpatent.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/541,589	<b>Applicant(s)</b> TOGOU ET AL.	
	<b>Examiner</b> GALEN HAUTH	<b>Art Unit</b> 4111	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                        |                                                                   |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/30/2005</u> .                                              | 6) <input type="checkbox"/> Other: ____.                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (PN 5460818) in view of Tanaka (PN 4438058) and Taub et al. (PN 3900433).

- a. With regards to claim 1, Park teaches a method for forming expandable blends of styrene, olefin, and blowing agent (abstract) for expandable beads (col 12 ln 1-2). Park does not teach adding a surfactant to the beads.
- b. Tanaka teaches applying a surfactant to expandable styrene beads to prevent blocking, add an antistatic effect to the product, and save on steam used to expand the beads (abstract). Tanaka teaches using the surfactant in 0.5-10 percent by weight of beads (col 3 ln 13-14). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a surfactant as taught by Tanaka in the expandable styrene-olefin bead taught by Park, because Tanaka teaches that doing so will prevent blocking, add an antistatic effect to the product, and save on steam used to expand the beads (abstract of Tanaka). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the surfactant in 0.5-2.0 parts by weight of the bead, because Tanaka teaches using 2% by weight in Example 1 (col 3 ln 31 of Tanaka). One in the art would have applied from within an amount which is disclosed to be suitable for its intended purpose by the prior art reference. Tanaka does not teach a temperature or pressure at which the surfactant is added to the beads.
- c. Taub teaches a method for forming polystyrene expandable beads impregnated with blowing agent and an impregnation aid (abstract) in which the styrene beads are contacted with the blowing agent in liquid suspension at atmospheric pressure (0.101 MPa) and 20 to 35 degrees Celsius (col 4 ln 5-16).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to prepare the expandable beads of the composition of Park with the surfactant taught by Tanaka present in the aqueous impregnation solution of Taub at atmospheric pressure and 20 to 35 degrees Celsius, because doing so allows the beads to be impregnated with the blowing agent (expanding agent) and the surfactant at a temperature below the activation temperature of the blowing agent in a single mixing step (in that the surfactant would have to be mixed in later in an additional mixing step were it not included with the blowing agent). It would have been obvious to one of ordinary skill in the art at the time the invention was made to impregnate the beads at a temperature of 20 to 30 degrees Celsius as Taub teaches mixing at 25 degrees Celsius (col 4 ln 30) which is within the range and the operating temperature is taken to be a result effective variable, routinely optimized by those versed in the art.

d. With regards to claim 2, in the process described above Park in view of Tanaka and Taub impregnates the styrene beads with surfactant in an aqueous medium (col 4 ln 9 of Taub).

e. With regards to claim 3, Tanaka teaches using a cationic surfactant (col 2 ln 58).

f. With regards to claim 4, in the process described in the rejection of claim 1 above the surfactant is in liquid suspension at 20 to 30 degrees Celsius.

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5. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (PN 5460818) in view of Tanaka (PN 4438058) and Taub et al. (PN 3900433) as applied to claim 1 above, and further in view of Henn et al. (PN 5563178).

a. With regards to claim 5, Park in view of Tanaka and Taub teach a method for forming an expandable styrene modified olefin-based resin bead obtained by the method of claim 1 as described above in the rejection of claim 1. Taub teaches subjecting the bead to steam at 95 degrees Celsius (.085 MPa) in order to pre-puff (pre-expand) the bead using butane or pentane as the blowing agent (col 2 ln 15). Taub does not teach that the steam is at a gauge pressure of .01-.10 MPa.

b. Henn teaches a method for expanding a styrene bead with pentane as the blowing agent (col 5 ln 24-36) in which the bead is subjected to a prefoaming (pre-expansion) by subjecting it to steam at 120 degrees Celsius (col 5 ln 51-52, 120 degree steam is at 0.0972 MPa gauge). It would have been obvious to one of ordinary skill in the art at the time the invention was made to subject the expandable beads of Park in view of Tanaka and Taub to pre-expansion by steam at .0972 MPa gauge, as such is an art recognized technique for pre-expansion of expandable styrene containing beads for the purposes of storage or pre-foaming (col 4 ln 21-28 of Henn).

c. With regards to claim 6, Park in view of Tanaka and Taub and further in view of Henn as applied to claim 5 above provides a pre-expanded styrene modified olefin based resin bead produced by the method of claim 5. Henn

teaches that the pre-expanded styrene beads are then further molded by passing steam over them at a temperature of 107 to 130 degrees Celsius (col 6 ln 1-8, 107-130 Celsius steam is at a pressure range of 0.0281 – 0.1687 MPa gauge). It would have been obvious to one of ordinary skill in the art at the time the invention was made to expand the pre-expanded beads of Park in view of Tanaka and Taub and further in view of Henn using steam at 0.05 to 0.15 MPa gauge as the steam pressure is a result effective variable that can be changed to affect the rate at which the pre-expanded styrene beads fully expand.

***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 2-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Claims 2-4 recite the limitation "**pre-expanded** beads of claim 1" in the preamble of the claim. There is insufficient antecedent basis for this limitation in the claim, because Claim 1 is a method for producing "**expandable**" beads containing no steps referring to a pre-expansion step.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GALEN HAUTH whose telephone number is (571)270-

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5516. The examiner can normally be reached on Monday to Thursday 7:30am-5:00pm ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sam Yao can be reached on (571)272-1224. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/GHH/

/Sam Chuan C. Yao/  
Supervisory Patent Examiner, Art Unit 4111